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Report

Pesticide Analysis for Naled
Robins AFB, GA Aerial Spray

Supplement of EHL(K) 74-25
December 1974

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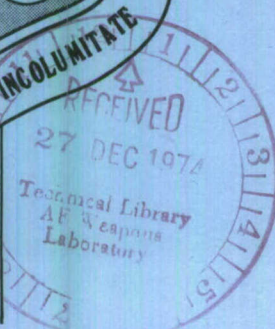
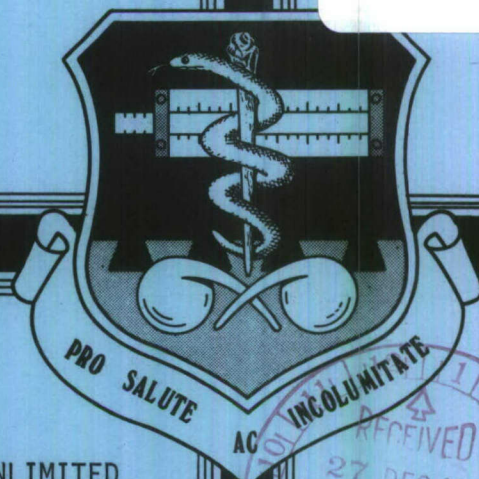
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Pesticide Analysis for Naled
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I. INTRODUCTION

Delay in the analysis of water samples for naled after the Robins AFB, GA aerial spray operation on 31 Jul 74 necessitated this supplement to EHL(K) Technical Report 74-25 titled "The Effect of Ultra Low Volume Aerial Dispersal of Naled on an Aquatic Habitat."

II. MATERIALS AND METHODS

Collection times and methods were described in EHL(K) 74-25. Analysis for naled was conducted at EHL(K) using electron capture gas chromatography. The limit of detection was 2.00 micrograms per liter.

III. RESULTS

A. Water analysis detected no naled prior to the aerial spray operation. The pretreatment analysis was conducted because personnel routinely used naled in ground fogging operations for mosquito control.

B. Water samples which were taken 30 min after the spray aircraft passed over the sampling site revealed the concentrations of naled shown in Table 1. The only concentrations that appear different are those at E1.5S and H1.5C which are approximately 1.9 to 2.3 times the mean concentration. An insufficient number of samples were taken to determine if these concentrations were significantly different from the mean. No detectable levels of naled were found in water samples taken 24 hr after treatment.

IV. DISCUSSION

A. The concentrations of naled found in water samples immediately after spraying do not pose a threat to most aquatic organisms. The most sensitive organism for which data is available is the waterflea for which is stated a 24 hr LC_{50} of 0.0035 ppm(1). The highest value found in this study is 10.53 $\mu\text{g/l}$ and this concentration decreased to below detectable levels within 24 hr. With only two points (30 min and 24 hr post-treatment) it is impossible to calculate a degradation curve but the half life of naled has been reported to be about six hrs. If such is the case in this situation, naled at a concentration of greater than 0.0035 ppm would have persisted for less than 12 hrs. Furthermore, the residues are well below the stated LC_{50} of 0.220 ppm for bluegills(1). These extremely low quantities of naled residue in water explain why no mortality was noted in any organism monitored during the test.

B. Acetylcholinesterase (AChE) levels were lowered in fish brain using caged fish biomonitoring. There was no significant difference in AChE levels in the treated areas and the control which was explained in the full technical report.

C. As shown in Table 1, no difference in naled residue was noted between open(S) and covered(C) sampling sites.

Table 1. Naled concentrations in water at sampling sites 30 minutes after the spray aircraft passed over the sampling site.

Description of the sites are given in EHL(K) 74-25.
Robins AFB, GA 24 Jul-2 Aug 74.

SITE	NALED CONCENTRATION
A0.75S	3.10 µg/l
C0.75S	2.49
B0.75C	2.43
D0.75C	2.79
E1.5S	10.53
G1.5S	3.58
F1.5C	3.36
H1.5C	8.85
I CK C	None detected
J CK S	None detected

V. REFERENCE

1. Pimental, D. 1971. "Ecological Effects of Pesticides on Non-Target Species", U.S. Government Printing Office, Washington, D.C.

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13. ABSTRACT Ultra low volume aerial application of naled (Dibrom 14) at 0.7 and 1.5 oz per acre were made at Robins AFB GA on 31 July 1974. The effects of the spray on non target aquatic organisms were monitored utilizing caged fish, shoreline sampling, drift traps, drop traps, acetylcholinesterase levels in fish brain and other observations. Acetylcholinesterase activity in fish brains was depressed in the treated areas but no significant mortality of fish was noted. No gross effects on the normal fauna was observed. From this test it is concluded that no extensive monitoring activities are required for routine spray missions using conventional rates of naled, but closely spaced, multiple applications may require monitoring.			

14.

KEY WORDS

LINK A

LINK B

LINK C

ROLE

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ROLE

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ROLE

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Dibrom
Fish
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Acetylcholinesterase

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